



# The Pentagon Renovation Program: New Ways of Doing Business in the 21st Century

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**Program Manager**





## The Pentagon Building - A Small City



*34 acres*

*6.5 million sq. ft.*

*3 Empire State Bldgs.*

*7,748 windows*

*17.5 miles of corridors*

*25,000 personnel*

*1,000,000 calls each day*

*Police force*

*Metro station*

*Fire Station*

*Health Facilities*

*Post Office*

*Mini-mall*

*Heliport*



# THE PROBLEM:

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**The Pentagon Has Never Undergone a Major Renovation in 58 Years**

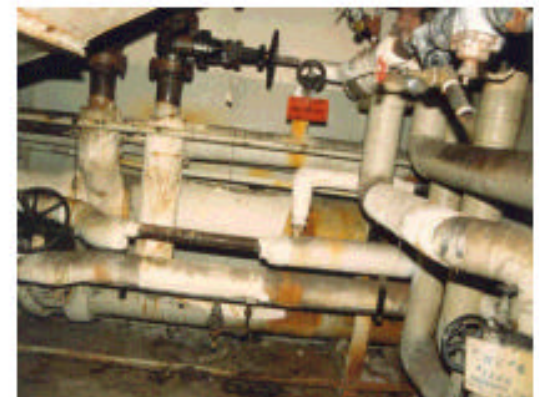
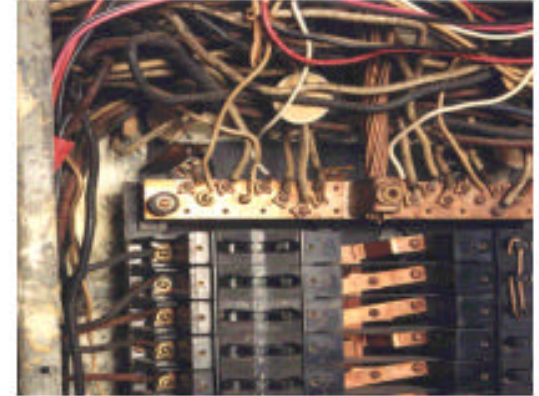






## Need for Renovation

*Major building systems beyond repair, non-compliant with modern building codes and ADA, hazardous materials present throughout, poor energy efficiency*







## Wedge 1 Ready for Occupancy

- Personnel began moving Feb. 2001
- 5,000 to occupy Wedge 1 by Oct. 2001



- Modern systems furniture
- Increased flexibility
- Improved air flow and lighting
- Improvements to vertical mobility





## Key Objective:

***Implement Approach that  
Rewards Behavior We Like***



- **Contracts reward inappropriate behavior**
  - **Low bid awards drive away top performers**
  - **Bidding process drives bids below reasonable cost**
  - **Contractors enter process as enemies**



- ***Driven to find problems to make profit***
- ***Turmoil, confusion, problems and time delays increase profit***
- ***Contractors play the game according to our rules***



- **Adversarial relationships have negative impact**
  - Despite “partnering” language, enemies don’t trust one another
  - Lack of trust drives excessive oversight
  - Contract processing costs exceed value of contract changes being worked
  - Pearl Harbor file building on both sides



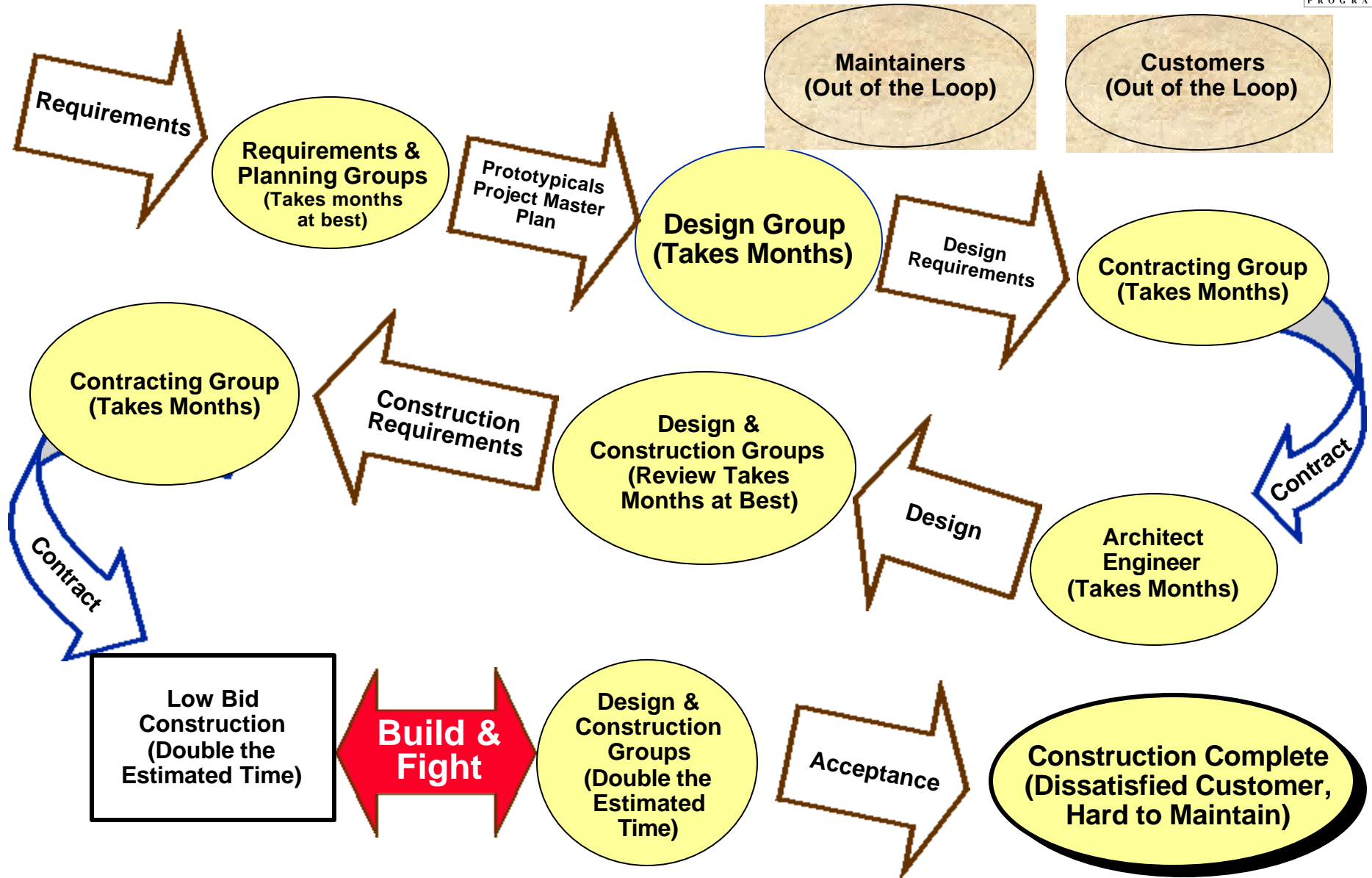


- The traditional way of doing business in government construction projects
  - Independent action and schedule within each stovepipe organization
  - Sequential processing
  - Multiple goals - multiple managers - **CONFLICT!**





# The Traditional Way of Doing Business in Government Construction Projects







## The New Way of Doing Business in the Pentagon Renovation Construction Projects



- Unified action and schedule
- Parallel processing
- Unified goals, unified leadership







## Making the Process Work: Integrated Product Teams



### G E O G R A P H I C   I P T S

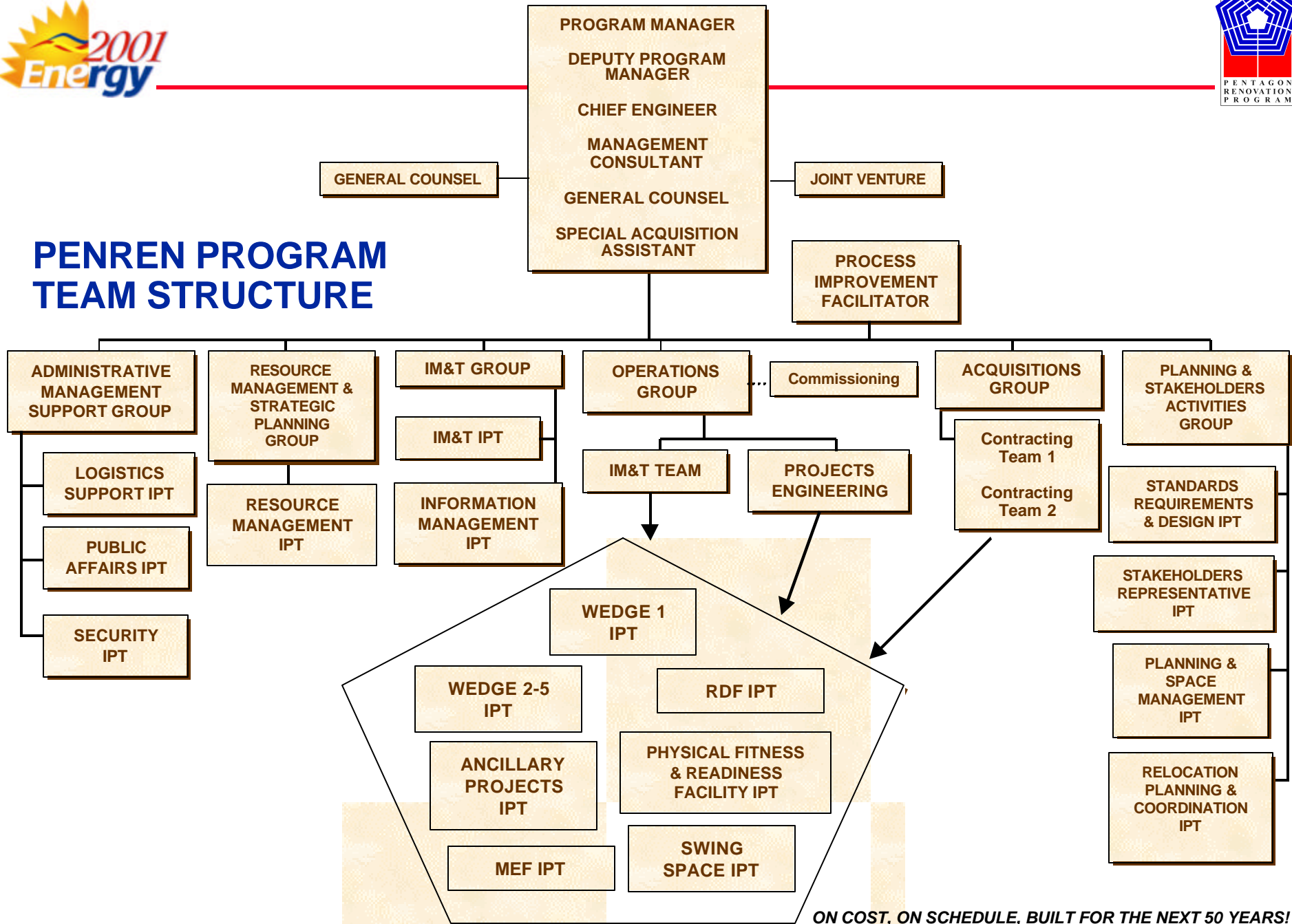
FUNCTIONAL IPTS	WEDGE 1	WEDGE 2	WEDGE 3	BASEMENT 1	BASEMENT 2	BASEMENT 3	ETC.
	REQUIREMENTS						
	PLANNING & DESIGN						
	ACQUISITION						
	COMMISSIONING						
	CONSTRUCTION						
	SECURITY						
	TENANT ACTIVITIES						
	ETC.						

*Each person belongs to at least two teams*



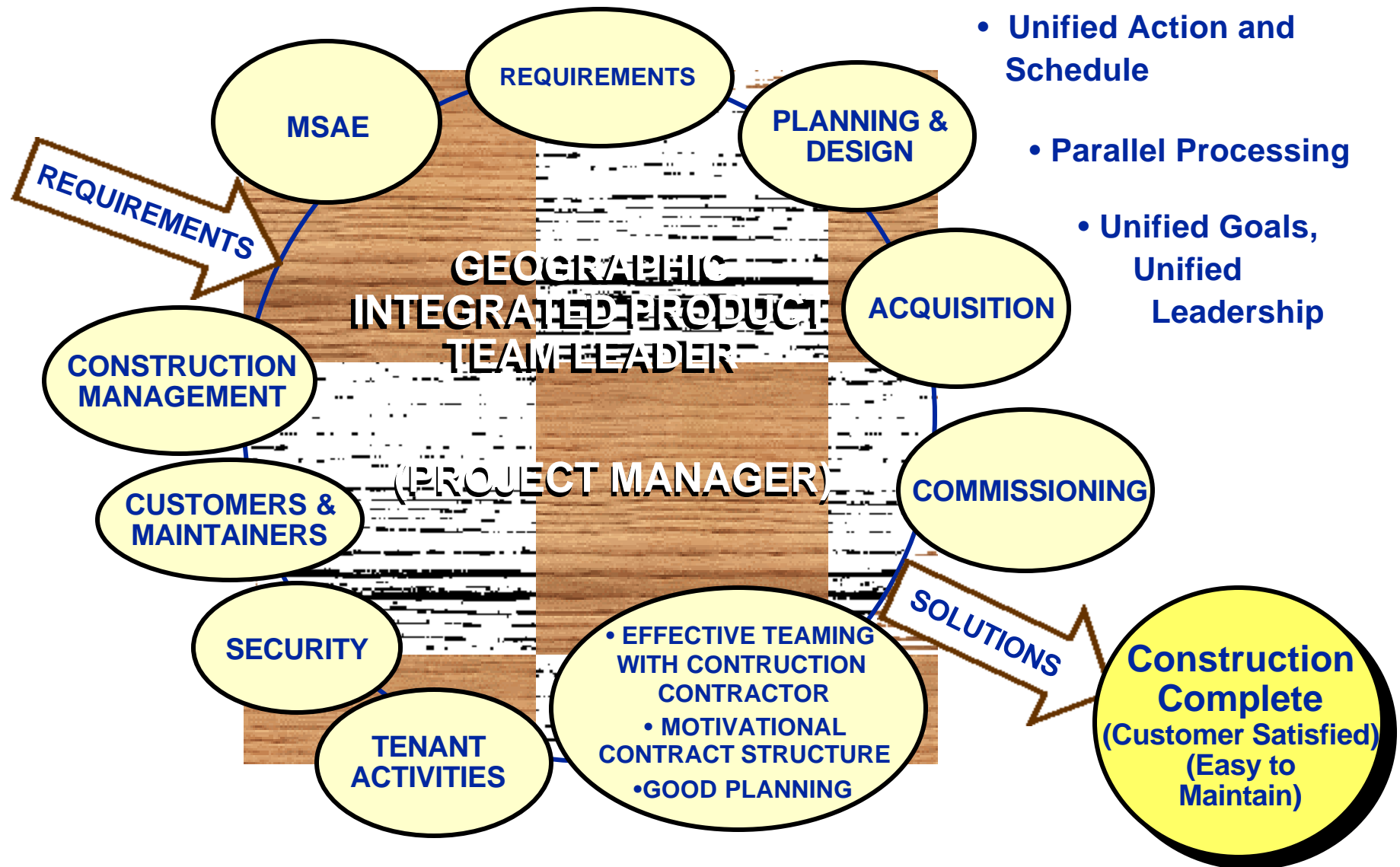


## PENREN PROGRAM TEAM STRUCTURE





# The New Way of Doing Business in the Pentagon Renovation Construction Projects





- **Effective teaming**
  - Integrated Product Teams
  - Functional/Geographic team matrix
  - Integration of contractor personnel onto teams
  - Integration of customers/maintainers onto teams





## Construction Approaches Used by Pentagon Renovation Program



- **Faster response**
- **Architect/Engineering support**
  - LoE, task order contracts for architect engineers
  - Multiple A/E contractors in place
  - Management support A/E to support program with flexibility
    - Quality assurance/inspection
    - Construction management support to GIPT's
- **Furniture**
  - IDIQ furniture contracts
    - 5 firms in constant competition
    - Award fees drive subsequent awards
- **Construction operations**
  - \$5K warranted individual on site for instant changes







## Construction Approaches Used by Pentagon Renovation Program



### • Acquisition Planning

- Acquisition strategy meetings
- Single meeting for decisions
- All involved parties present
- Clarify requirements
- Clarify business approach
- Achieve consensus
- All sign



## Government Must Keep Pace with New Way of Doing Business



- Problem identification must be followed with prompt review and decision
- Must have team in place to mobilize and respond quickly
- Procurement process must have flexibility to rapidly activate other contractors







## Construction Approaches Used by Pentagon Renovation Program



- **Design-Build contracts for construction**
- **Phased source selection:**
  - **Phase 1 (Initial down-select)**
    - Typically 2-3 teams selected
    - Selection based on team makeup and past performance
    - Fast decision, minimum cost to offerors
  - **Phase 2 (Final Selection)**
    - Competition between teams from Phase 1
    - Results in conceptual design
    - Best value...cost, design, team, IMP/IMS
    - Cost as independent variable (give them the budget up front)
    - 100K stipend to offerors





## Construction Approaches Used by Pentagon Renovation Program



- **Strong motivational contract structure**
  - **FPIF/AF**
  - **Typically 70/30 to 50/50 share ratio**
  - **10% AF**
  - **Typically 85% award fee threshold to share incentive opportunity**
  - **Performance specifications**
  - **Zero profit at target cost**







## Wedges 2-5: 2001



- **Acquisition Approach:** Two-phased source selection IAW FAR 36.3 for design-build
- **Source Selection Approach:** Phase I qualifications screen, Phase II RFP
  - Extensive industry involvement, oral proposals, most probable cost analysis, performance based requirements, draft RFP process
  - Award value approximately \$500M: offerors will propose to this amount
- **Contract Type:** FPI(F) with award fee
  - 50/50 cost sharing on overruns, 70/30 underruns, 120% ceiling
  - 0% target profit, 10% award fee pool





## Wedges 2-5: 2001



- Contract Structure:
  - 10+ years period of performance
  - Every sq. foot of space categorized as a space type
  - 16 pages of performance criteria by space type
  - Market basket mechanism developed for this project to escalate prices over the life of the contract
    - All prices proposed in constant FY2001 \$s
  - Earned value management reporting & lean construction techniques
  - Integrated, co-located Govt./Contractor site offices
- Nature of contractual relationship becomes more important than capturing every conceivable possibility
- Award expected in July 01





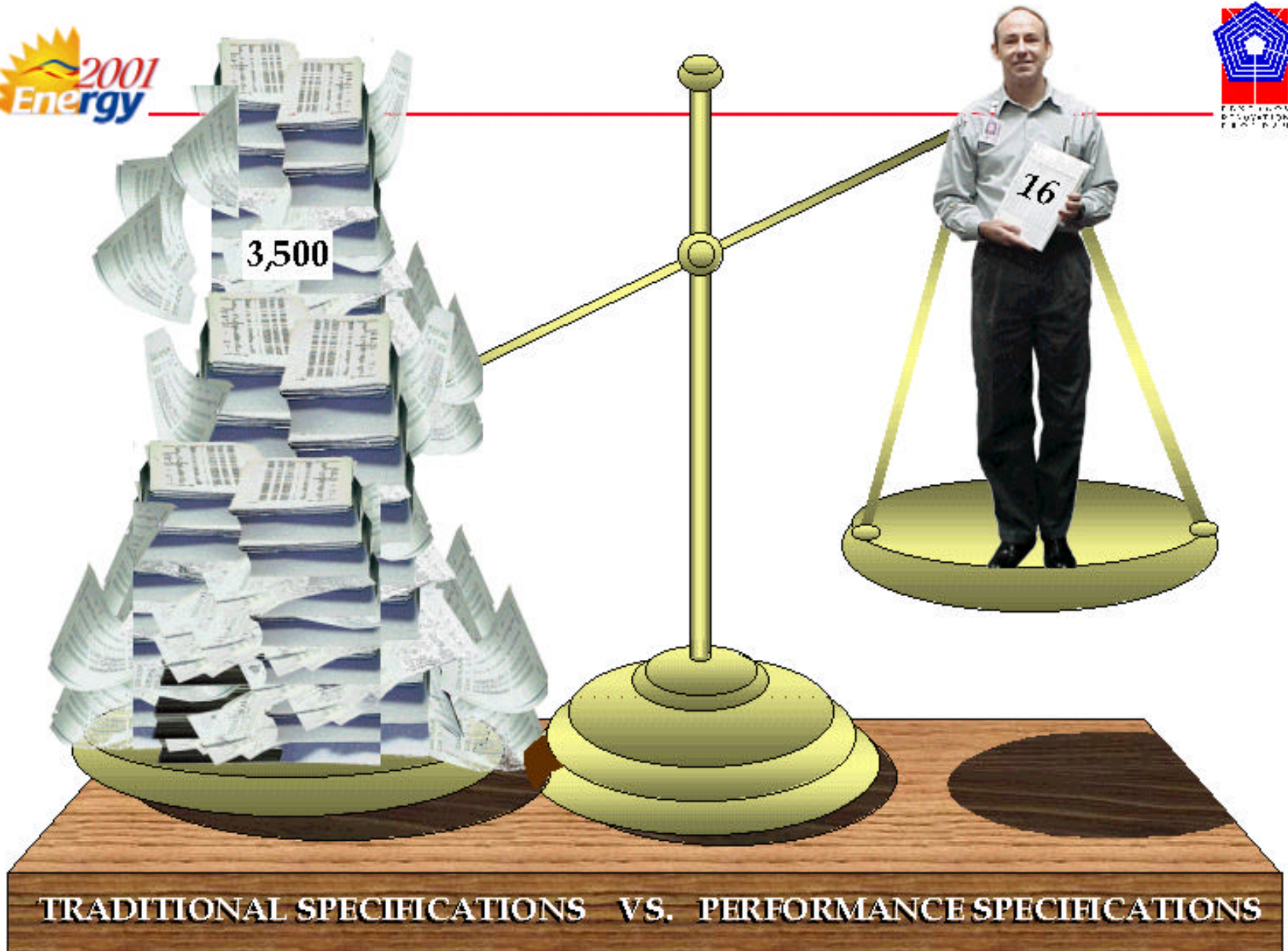


## The New Way of Doing Business in the Pentagon Renovation Program



- **Performanced-Based Requirements**
  - Tell contractor what you want,  
**NOT how to get there.**





**TRADITIONAL SPECIFICATIONS VS. PERFORMANCE SPECIFICATIONS**





## Performance Criteria Identified



CRITERIA	AREAS	CEILINGS				WALLS				WINDOWS		HVAC		PLUMBING	ELECTRIC
	TYPE	1	2	3	4	1	2	3	4	1	2	1	2	1	1
ACCESSIBLE		X	X	X								X	X	X	X
ACOUSTICS		NCR .55	NRC .65	NRC .55	NRC .55							X	X		
ENERGY EFFICIENT										X	X	X	X		X
FLEXIBILITY		X	X	X	X							X	X	X	X
GLARE CONTROL															
LIFE CYCLE/ DURABILITY												20	20	X	
LIGHT REFLECTIVITY		LR 0.80	LR 0.83	LR 0.80	LR 0.78										
MAINTAINABILITY		X	X	X	X	X	X	X	X	X		X		X	
REPLACEABLE		X	X	X								X		X	
SECURITY					X			X							
SERVICEABILITY										X		X	X		
SOUND TRANSMISSION						STC 45	STC 45	STC 50	STC 45	STC 45					
STANDARDIZATION / COMPATIBILITY		X	X	X	X						X				



## Performance Criteria Defined



CRITERIA	
TYPE 1	Equipment selection can be any combination of centralized or de-centralized system as long as the equipment/systems meets the mechanical space criteria. Heat Pump systems are not acceptable and roof mounted equipment will require special approval do to the historic status of the facility. Design the HVAC system to provide thermal zones of control. Provide terminal equipment for each zone. Terminal equipment may be variable-air-volume boxes, fan-coil units, or similar devices that are capable of controlling the temperature in their respective zone. Separate perimeter exposure from internal zones. A perimeter zone shall not exceed 55.74 Sq. M, which includes a maximum of 6.1 meters of exterior wall. An interior zone shall not exceed 167.22 Sq. M.. Provide separate zone based on the mechanical criteria spreadsheet.
TYPE 2	Equipment selection shall be based on the specific areas needs. This system will be utilized in the "Special Spaces", primarily operating 24 hours a day capable of meeting specific space requirements as defined on the "Performance Criteria-Mechanical" special space and command areas.
ACCESSIBILITY	Pertains to the ability to locate and perform service on all valving and HVAC equipment/systems that will need attention after installation for operation, maintenance, or emergency needs.
ACOUSTICS	Pertains to the H "Noise Criteria"
DURABILITY	Pertains to the a life expectancy s and/or as state
ENERGY EFFICIENT	All installed HVA Standard 90.1-1999"
FLEXIBILITY	Pertains to the ability of the installed HVAC systems to accommodate for future expansion (i.e. increases in capacity, additional zone control needs, pertinent isolation valves, and tenant fit-out changes).

***All installed HVAC equipment/systems shall meet the requirements of Section 6 "ASHRAE/IESNA Standard 90.1-1999"***





# Performance Criteria Specified



CRITERIA		OFFICES SUITES			SPECIAL SPACES		
		O-1	O-2	O-3	SP-1	SP-2	SP-4
		Senior Executive Office Suites	Executive Offices	General Office Area	Laboratory	Food Service	Automatic Processing (AD)
TYPE		1	1	1	1	1	
MECHANICAL							
Occupancy Schedule	Monday-Friday	0600-1800	0600-1800	0600-1800	0600-1800	0600-2000	
	Saturday	Closed	Closed	Closed	Closed	Closed	
	Sunday	Closed	Closed	Closed	Closed	Closed	
	Holidays	Closed	Closed	Closed	Closed	Closed	
Temp. (°C) (Occupied)	Cooling Summer	24 (+-2)	24 (+-2)	24 (+-2)	24 (+-2)	25 (+-2)	
	Heating Winter	21 (+-2)	21 (+-2)	21 (+-2)	21 (+-2)	21 (+-2)	
Humidity (%RH)	Summer	50%	50%	50%	50%	50%	
	Winter	-	-	-	-	-	
O.A. Ventilation Rate		20 CFM/Person	20 CFM/Person	20 CFM/Person	20 CFM/Person	15 CFM/Person	
Space Pressure		Positive	Positive	Positive	Negative		
Total Air Flow (ACH-Minimum) During Occupancy		6	6	6	12		
Redundancy		no	no	no	no		
Filtration (% Efficient Pre-Filter / After Filter)		30/80	30/80	30/80	30/80		
Noise Criteria (NC)		35	35	45	35-40		





# Pentagon Renovation



*On Cost, On Schedule, Built for the Next 50 Years*

<http://renovation.pentagon.mil>

